WHAT IS CLAIMED IS:

1. An isolated nucleic acid encoding an osteoprotegerin binding protein selected from the group consisting of:

a) the nucleic acid sequence as in Figure 1 (SEQ ID NO: 6 );

b) nucleic acids which hybridize to the polypeptide coding regions as shown in Figure 1 (SEQ ID NO: 6 ) and remain hybridized under high stringency conditions; and

c) nucleic acids which are degenerate to the nucleic acids of (a) or (b).

2. The nucleic acid of Claim 1 which is cDNA, genomic DNA, synthetic DNA or RNA.

3. A polypeptide encoded by the nucleic acid of Claim 1.

4. The nucleic acid of Claim 1 including one or more codons preferred for Escherichia coli expression.

5. The nucleic acid of Claim 1 having a detectable label attached thereto.

6. The nucleic acid of Claim 1 comprising the polypeptide-coding region of residues 1-316 as shown in Figure 1 (SEQ ID NO: 6 ).

7. A nucleic acid encoding a polypeptide having the amino acid sequence of residues 1-316 or residues 70-316 as shown in Figure 1 (SEQ ID NO: 7 ).

18. The protein of Claim 15 which has been covalently modified with a water-soluble polymer.

19. The protein of Claim 18 wherein the polymer is polyethylene glycol.

20. The protein of Claim 15 which is a soluble osteoprotegerin binding protein.

21. The protein of Claim 20 having the amino acid sequence from residues 70-316 inclusive as shown in Figure 1 (SEQ ID NO: 7), or a fragment, analog, or derivative thereof.

22. An antibody or fragment thereof which specifically binds an osteoprotegerin binding protein.

23. The antibody of Claim 22 which is a monoclonal antibody.

24. A method for detecting the presence of an osteoprotegerin binding protein in a biological sample comprising:

incubating the sample with the antibody of Claim 22 under conditions that allow binding of the antibody to the osteoprotegerin binding protein; and

detecting the bound antibody.

25. A method for detecting the presence of osteoprotegerin in a biological sample comprising:

incubating the sample with an osteoprotegerin binding protein under conditions that allow binding of the protein to osteoprotegerin; and

measuring the bound osteoprotegerin binding protein.

8. An expression vector comprising the nucleic acid of Claim 1.

9. The expression vector of Claim 8 wherein the nucleic acid comprises the polypeptide-encoding region as shown in Figure 1 (SEQ ID NO: 4).

10. A host cell transformed or transfected with the expression vector of Claim 8.

11. The host cell of Claim 10 which is a eucaryotic or procaryotic cell.

12. The host cell of Claim 11 which is Escherichia coli.

13. A process for the production of an osteoprotegerin binding protein comprising:

growing under suitable nutrient conditions host cells transformed or transfected with the nucleic acid of Claim 1; and

isolating the polypeptide product of the expression of the nucleic acid.

14. A polypeptide produced by the process of Claim 13.

15. A purified and isolated osteoprotegerin binding protein, or fragment, analog, or derivative thereof.

16. The protein of Claim 15 which is a human osteoprotegerin.

17. The protein of Claim 15 having the amino acid sequence as shown in Figure 1 (SEQ ID NO: 7).

26. A method to assess the ability of a candidate compound to bind to an osteoprotegerin binding protein comprising:

incubating the osteoprotegerin binding protein with the candidate compound under conditions that allow binding; and

measuring the bound compound.

27. The method of Claim 26 wherein the compound is an agonist or an antagonist of an osteoprotegerin binding protein.

28. A method of regulating expression of an osteoprotegerin binding protein in an animal comprising administering to the animal a nucleic acid complementary to the nucleic acids as shown in Figure 1 (SEQ ID NO: 4).

29. A pharmaceutical composition comprising a therapeutically effective amount of an osteoprotegerin binding protein in a pharmaceutically acceptable carrier, adjuvant, solubilizer, stabilizer and/or anti-oxidant.

30. The composition of Claim 29 wherein the osteoprotegerin binding protein is a human osteoprotegerin binding protein.

31. A method of treating bone disease in a mammal comprising administering a therapeutically effective amount of a modulator of an osteoprotegerin binding protein.

32. The method of Claim 31 wherein the modulator is a soluble form of an osteoprotegerin binding protein.

33. The method of Claim 32 wherein the modulator is an antibody, or fragment thereof, which specifically binds an osteoprotegerin binding protein.